



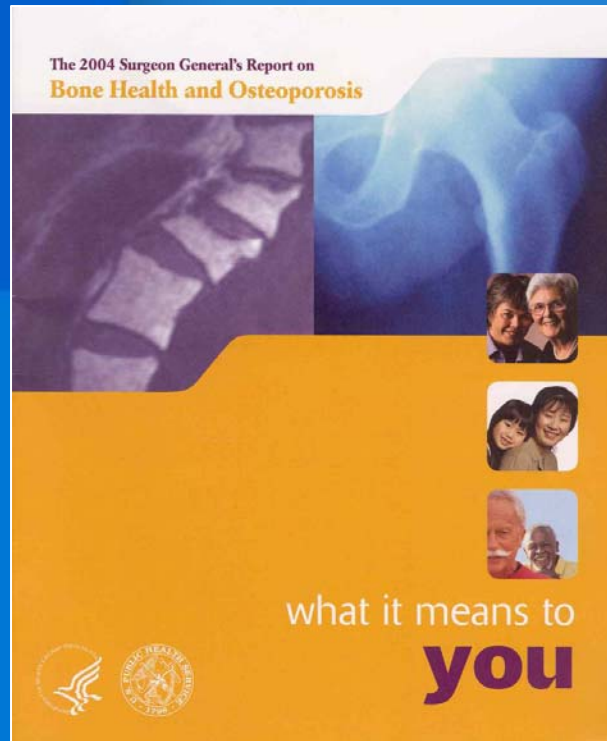
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# What You Need to Know About Your Bone Health



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# *Fit to a T*



*Fit to a T* is an education program organized by the U.S. Bone and Joint Initiative in response to the U.S. Surgeon General's Report on Bone Health and Osteoporosis



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# Are You Fit to a T?

Do you know your

- Blood pressure?
- Cholesterol?
- Weight?
- T-score?



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# Why Bone Health?

- Bone health is important to do the things you want to do
- Issues with bone health may not cause symptoms early



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# Short lesson on bones & joints

- Muscles, tendons, ligaments keep bones and joints together and allow you to move
- **Osteoporosis**: Degeneration of **bones** makes your bones weak
- **Osteoarthritis**: Degeneration of **joints** makes your joints stiff and hurt





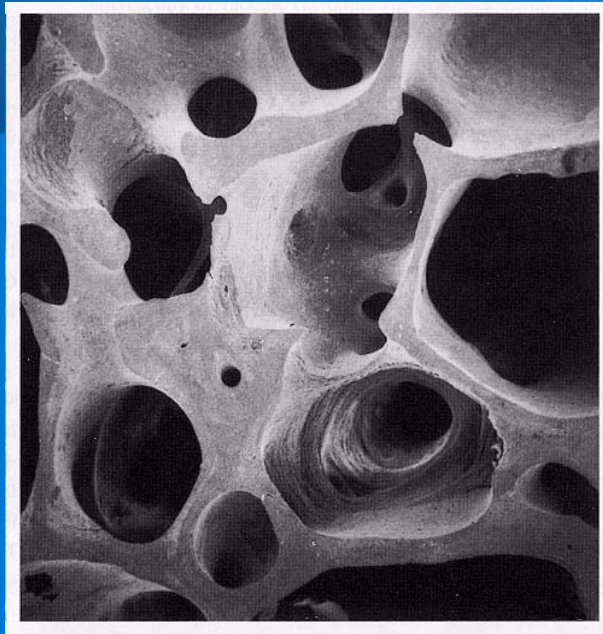
# Low Bone Mass and Osteoporosis

- Low bone mass is the term used for bones that have become weaker than normal, but not as severe as in osteoporosis.
- A person with low bone mass is still at risk for broken bones. The word osteopenia has been used to describe low bone mass.

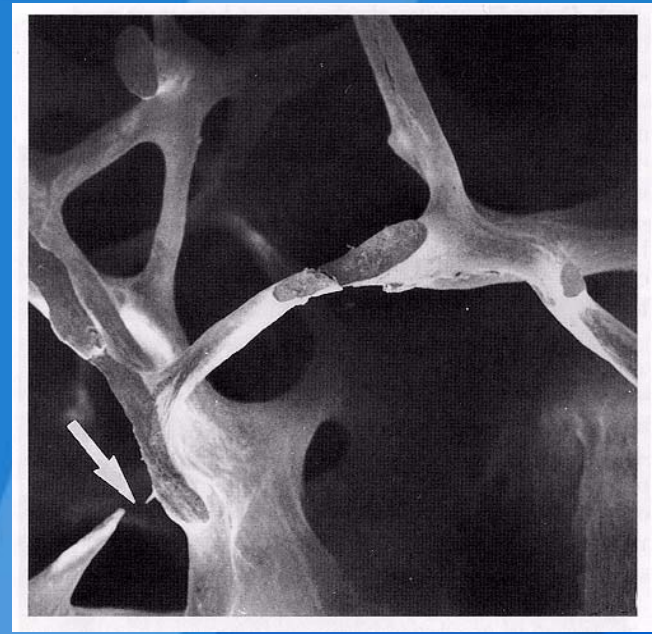


# Osteoporosis

- Normal bone – thick with multiple connections
- Low bone mass or osteoporosis – significant bone loss; thinner bone with fewer connections



**Normal**



**Osteoporosis**



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# Risk of Broken Bones

- Bone strength  
= Bone density + bone quality
- Bone density is what is typically measured
- More difficult to measure bone quality



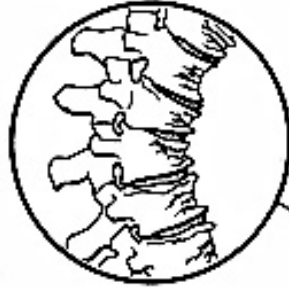
# How Common is Osteoporosis in the U.S.?

- More than 44 million Americans have osteoporosis or low bone mass
- 80% are women
- 1 in 2 women over 50 years old
- 1 in 4 men over 50 years old
- 1 in 3 men will die within one year if they suffer a hip fracture due to osteoporosis

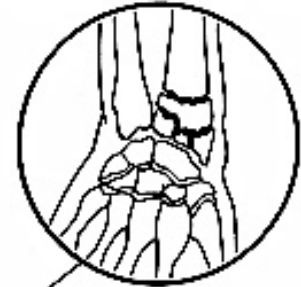


# Osteoporosis-Related Fractures

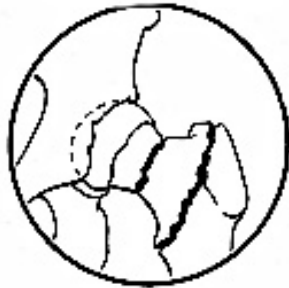
**Vertebral  
Fractures:  
547,000**



**Wrist  
Fractures:  
397,000+**

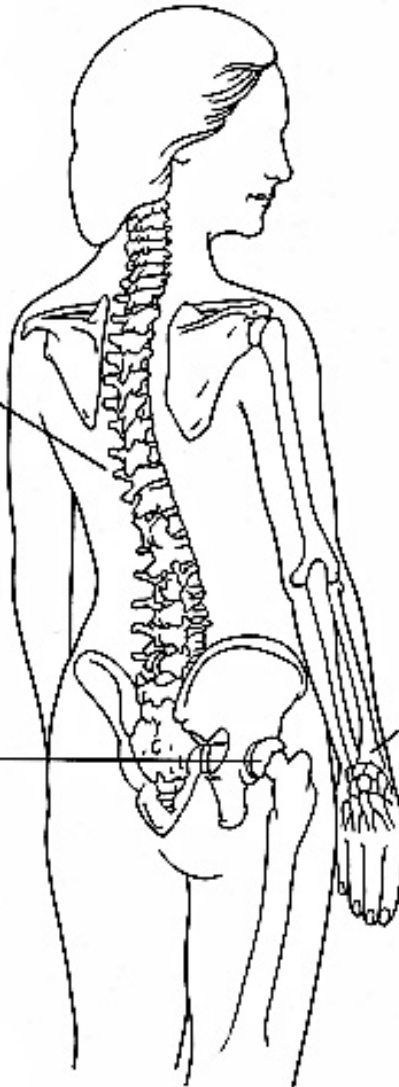


**Pelvic  
Fractures:  
135,000**



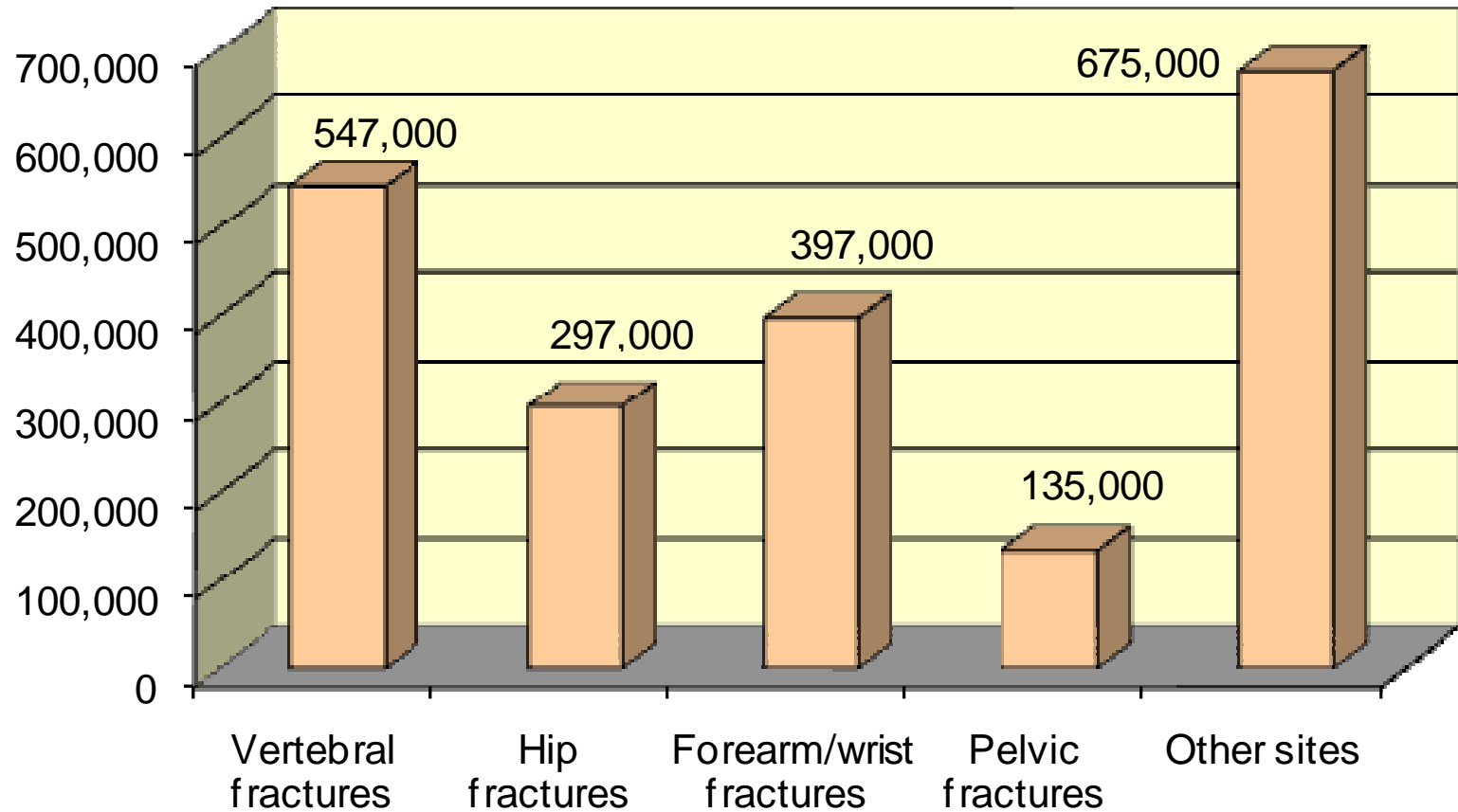
**Hip  
Fractures:  
297,000**

**Other  
Fractures:  
675,000**



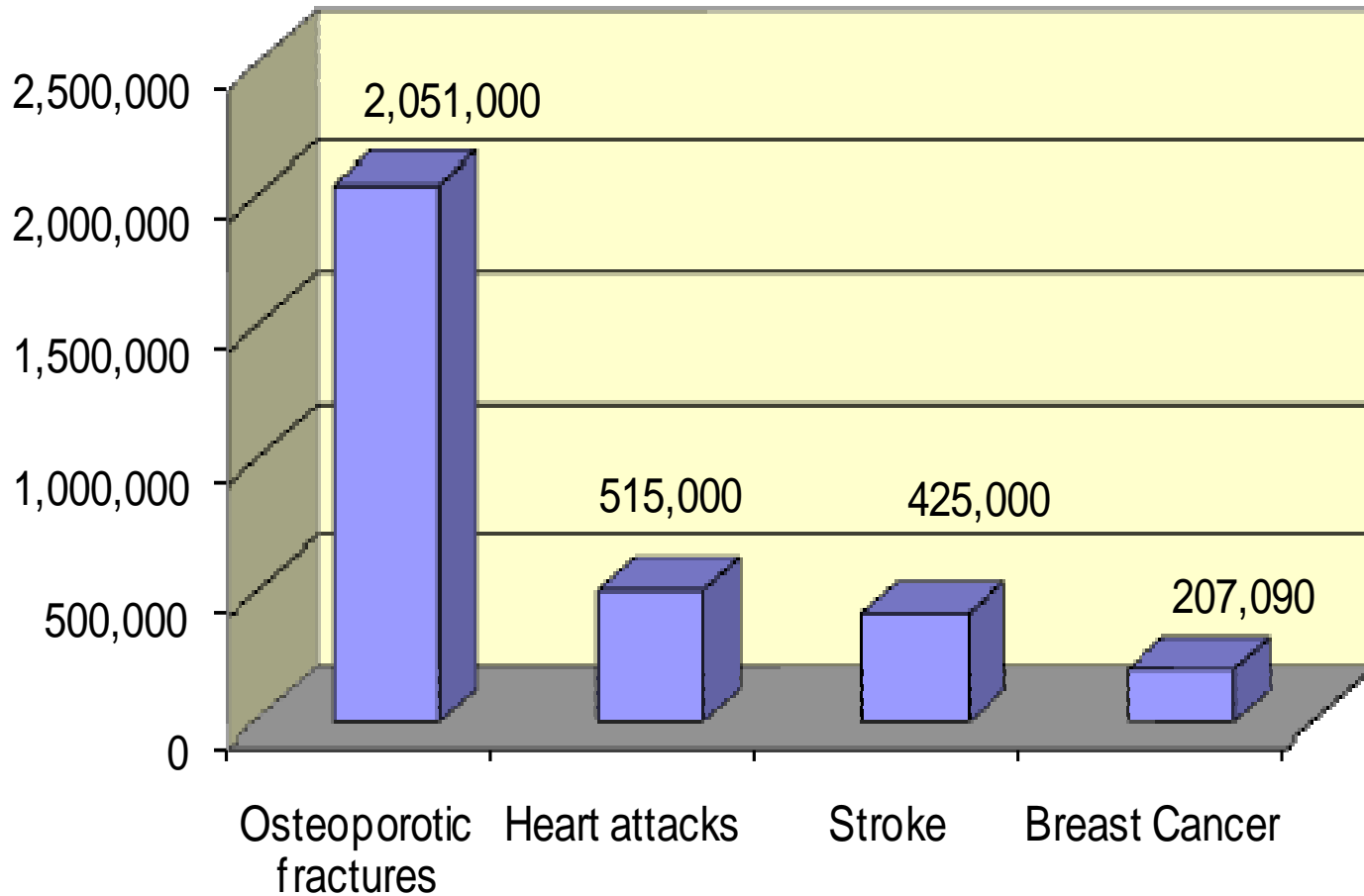
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# Common locations for Osteoporosis fractures



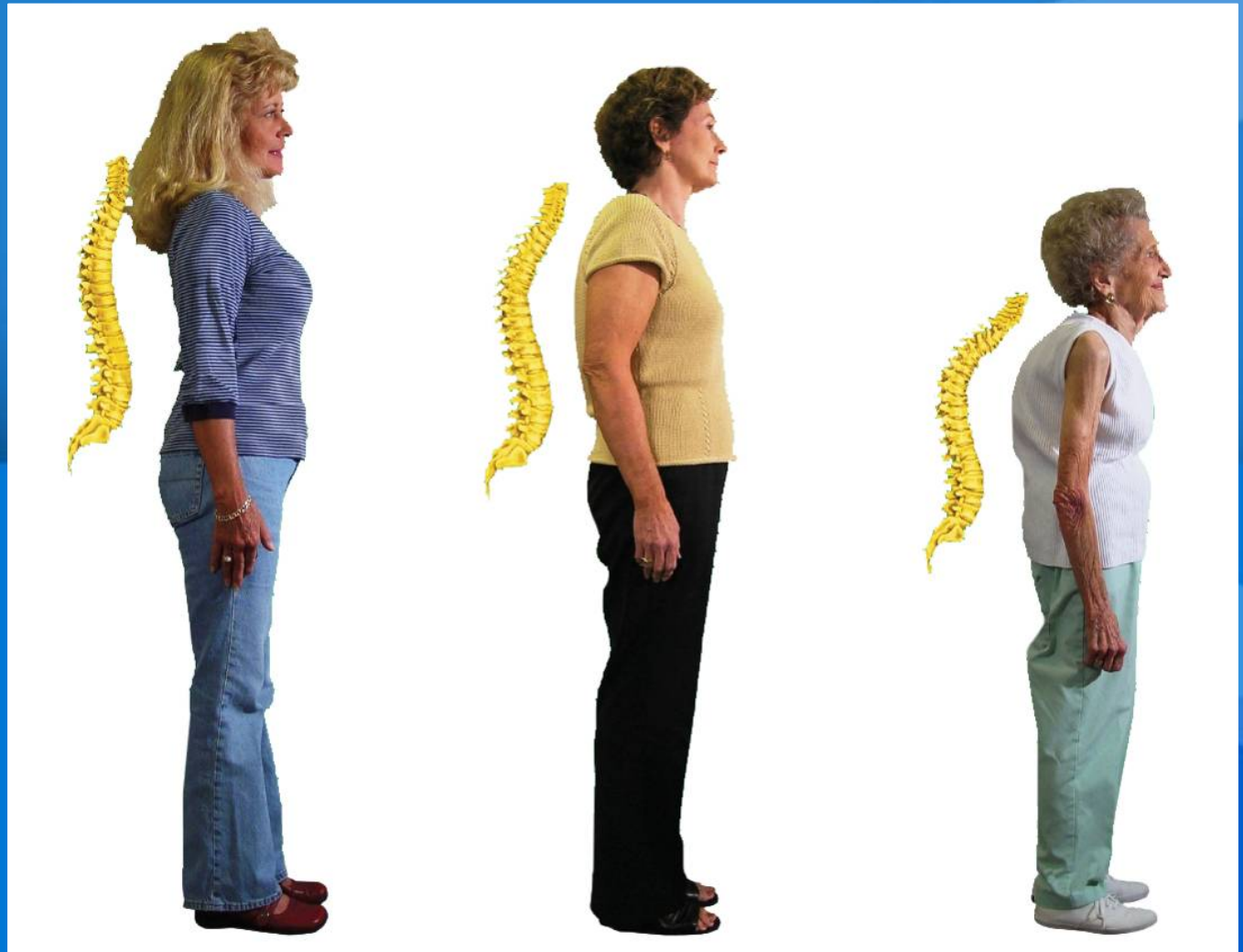
National Osteoporosis Foundation, 2005

# Osteoporosis fracture incidence vs. other diseases



National Osteoporosis Foundation 2010, American Heart Association 2009, American Cancer Society 2010

# Osteoporosis



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# Why this is important?

## Consequences

- Fracture from a simple fall
- Decreased activity level
- Difficulty with daily tasks
- Ability to carry things, move, balance
- Self-esteem
- Depression
- Quality of life



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# Common Myths About Osteoporosis

- “I’m too young and healthy to worry about osteoporosis”
- “I’m too old to worry about it – there isn’t anything that can be done anyway”
- “Only women get osteoporosis”
- “Only Caucasians get osteoporosis”



# Common Myths Addressed

- Everyone is at risk for osteoporosis
- It can be prevented or detected early
- Treatment options are available



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# Frequent Questions

- How do I know if I have osteoporosis?
- What puts me at risk for osteoporosis?



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# Warning Signs

- More than one fracture
- Fracture after a fall
- Loss of height



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# Risk Factors-Osteoporosis

- Age
- Sex
- Ethnicity
- Family history
- Low body weight
- Chronic medical problems
- Some medications
- Lifestyle factors



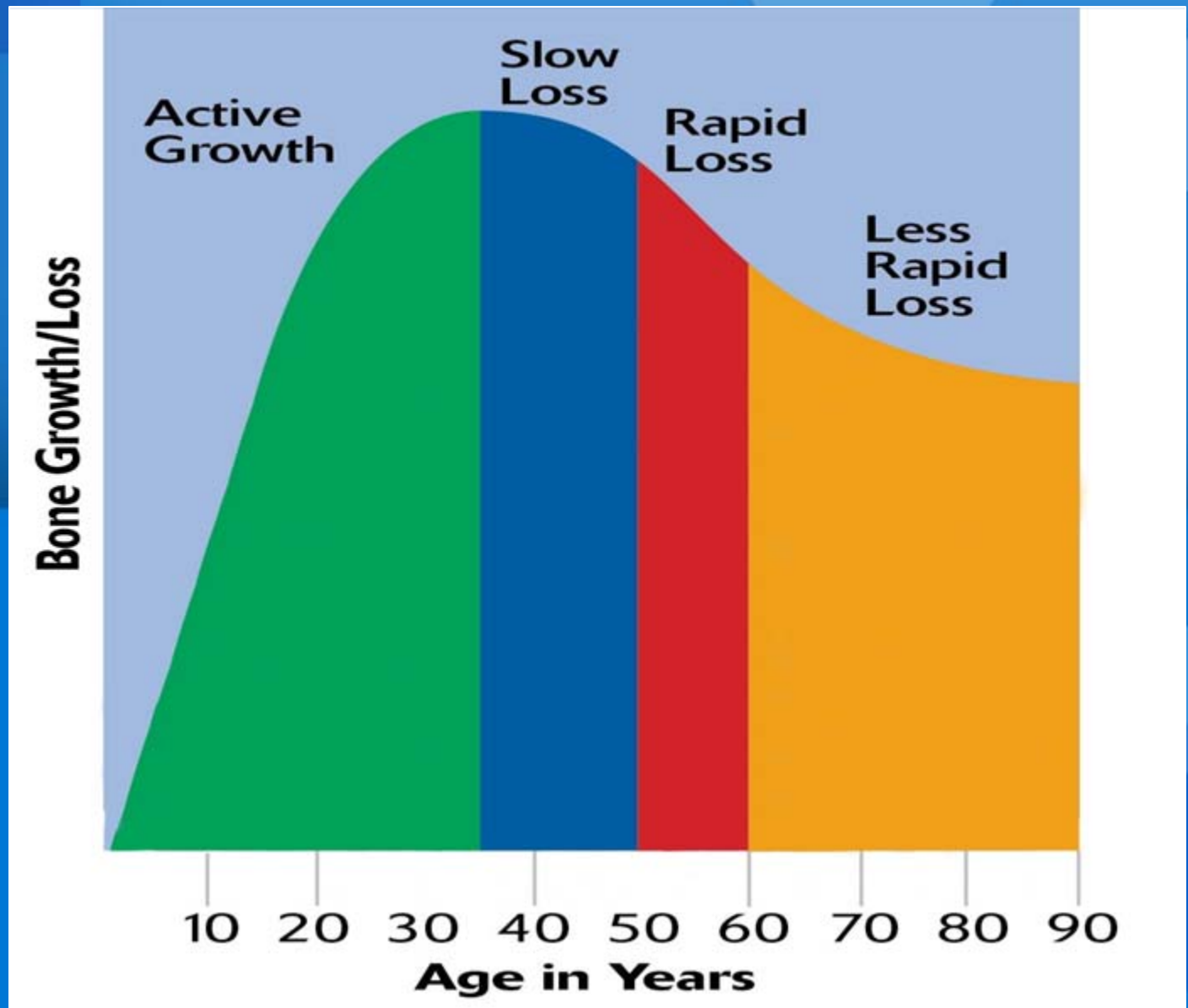


# Risk Factors You Can't Change

- Age
- Sex
- Body size
- Family history
- Some medications
- Chronic medical problems
- Hormone levels



# Bone Growth and Loss



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# Sex - Women

- Menopause and increased loss of bone
- Low body weight



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# Sex: Men & Osteoporosis

Under-diagnosed

Unrecognized

Under  
-reported



Inadequately researched



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# Sex: Men & Osteoporosis



- 2 million American men have osteoporosis
- 3 million more are at risk
- 1/3 of male hip fractures related to osteoporosis
- 1/3 of these men will not survive 1 year after fracture

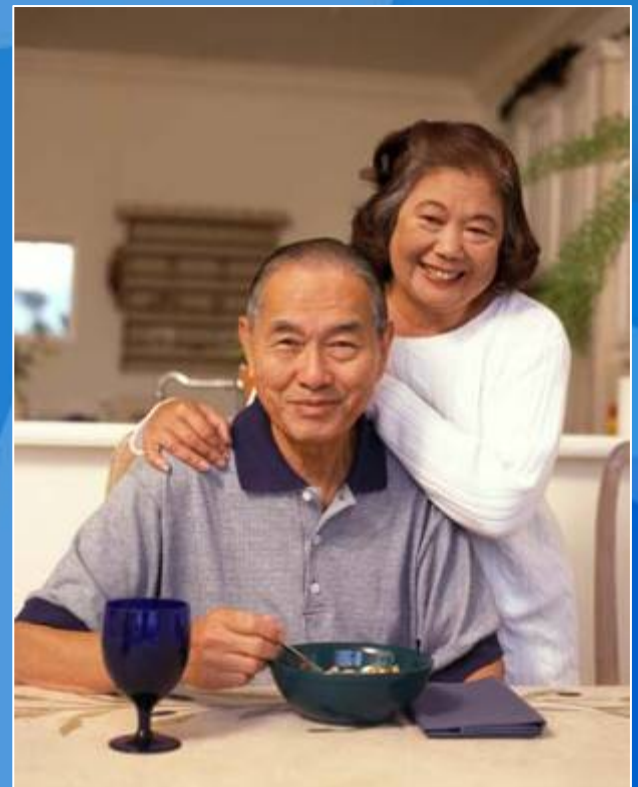


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# Ethnicity & Osteoporosis

- 20% of Caucasian & Asian-American women have osteoporosis
- 50% have low bone mass



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# Ethnicity & Osteoporosis



- Hispanic women at higher risk than we realized
- More than half of Hispanic women 50+ experience significant bone loss
- Impact from lactose intolerance and lack of exercise



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# Ethnicity & Osteoporosis

- 5% African-American women 50+ have osteoporosis
- 35% more have low bone density
- Risk of hip fractures doubles about every 7 years



- 50% less calcium than RDA



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# Risk Factors You Can Change

- Low calcium or Vitamin D intake
- Inactive lifestyle
- Smoking
- Drinking excessive amounts of alcohol ... >2 drinks per day
- Eating disorders



# Warning Signs

- Broken bone / Fragility fracture
- Back pain or spinal deformity
- Loss of height

Even if none of these are present, you should still do a risk assessment



# Diagnosis

## Before Your Appointment

- Prepare to describe your symptoms, if any
- Gather medical history
- Gather family history
- Make list of medications
- Write down your questions and bring to the appointment, with your risk assessment.



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# Diagnosis – Questions to ask during your appointment



- Am I at risk for osteoporosis?
- Should I be tested for it?
- If I have osteoporosis, what should I expect from treatment ?



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- If I don't have osteoporosis, what can I do to protect my bones?



# Bone Densitometry



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# Diagnosis – FRAX Score



The web-based tool, FRAX<sup>®</sup>, helps your doctor estimate your 10-year risk of osteoporosis-related fracture.

Your risk factors such as age, sex, weight, height, and hip BMD, if available, are entered into FRAX<sup>®</sup>, followed by clinical risk factors.



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# Who should have bone densitometry testing?

- Anyone with a fragility fracture  
(Fall from a standing height or less)
- All women age 65 and older
- Postmenopausal younger than 65 with risk factors
- Men over 50 with risk factors

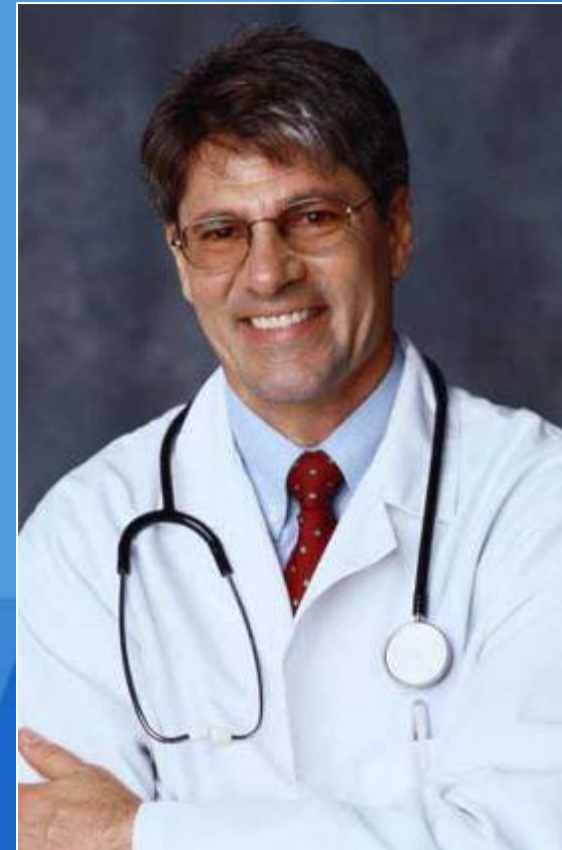


# The T-score

- Bone density compared to that of similar healthy young adult
- World Health Organization defined
  - Normal +1 to -1
  - Low bone mass -1 to -2.5
  - Osteoporosis -2.5 or lower
- The lower your score, higher risk of fracture



# Treatment



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# Medication

- Bisphosphonates
- Estrogen Therapy
- Medications based on natural hormones
- SERMs
- Parathyroid Hormone
- RANKL Inhibitor





# Medication-under investigation



Vitamin D metabolites

New bisphosphonates

New SERMs



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# Prevention



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# For Strong Bones: Calcium

Meals

750 mgs

+

Calcium

Supplement

500 mgs

---

1250 mgs



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# For Strong Bones: Calcium

## Recommended Calcium Intake

- | <u>Infants</u>                      | <u>Amount in mg/day</u> |
|-------------------------------------|-------------------------|
| 0-6 and 6-12 Months                 | 210 / 270               |
| <u>Children and Adolescents</u>     |                         |
| 1-3 and 4-8 years                   | 500 / 800               |
| 9 through 18 years                  | 1300                    |
| <u>Adult Women and Men</u>          |                         |
| 19 through 50 years                 | 1000                    |
| > 50 years                          | 1200-1500               |
| <u>Pregnant and Lactating Women</u> |                         |
| 18 years                            | 1300                    |
| 19 through 50 years                 | 1000                    |



# The Role of Vitamin D

- Essential for absorption of calcium from your diet
- Vitamin D is made in skin when exposed to direct sunlight
- Can be ingested in foods such as egg yolks, fish, liver, or fortified dairy products or orange juice



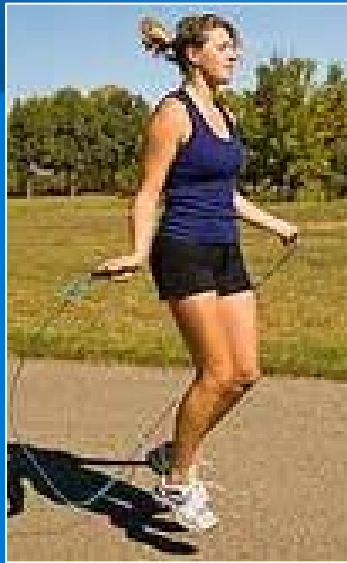
# Vitamin D

- More difficult than calcium to take in through food sources
- Controversy exists regarding recommended daily intake needs
- Supplements available for those at risk of low vitamin D intake (e.g., those who cannot consume dairy products)





# Weight-Bearing Exercise



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Consult your health care professional first

# Role of Exercise in Prevention and Treatment

- Decreased risk of falling
- Improved bone mass and strength
- Enhanced muscle strength
- Improved balance, better posture
- Increased flexibility of soft tissues
- Improved cardiovascular fitness
- Improved depression





# Good for Building Bone Strength?



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# Tai-chi helps reduce falls by improving balance & mobility



- *Best to do weight-bearing AND balance and strengthening exercises*



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**Consult your health care professional first**

# Fall prevention in the home

- Use handrails (stairs, bathroom)
- Keep floors free of clutter, and clean but not slippery
- Wear supportive, low-heeled shoes
- Don't walk in socks; floppy slippers
- Ensure good lighting in all rooms
- Install ceiling lighting in bedrooms



- Keep a flashlight at bedside
- Check posture in mirror often



# More ... Home Fall Prevention

- Use portable phone
- Keep phone and electrical wires out of walkways
- Use skid-proof backing on carpets/rugs, rubber mat in shower/tub
- Keep a week's supply of prescription medications on hand
- Have daily planned contact with family member or neighbor
- Get a monitoring device with 24 hour response time in emergency





# Osteoporosis

While you cannot change your genetics or heredity, skeletal frame, sex, race or age .....  
you can control other risk factors



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# Understanding Osteoporosis

Questions and concerns?



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# Acknowledgements

*Fit to a T* Task Force members

National Osteoporosis Foundation  
NIH Bone Disease and Related Disorders  
National Resource Center



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[www.fit2t.org](http://www.fit2t.org)

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[www.fit2t.org](http://www.fit2t.org)

# Thank you!

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